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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,406	07/26/2001	Andrea Giovanni Cigada	853063.493	1065
500	7590	06/15/2004	EXAMINER	
SEED INTELLECTUAL PROPERTY LAW GROUP PLLC			VU, QUANG D	
701 FIFTH AVE			ART UNIT	
SUITE 6300			PAPER NUMBER	
SEATTLE, WA 98104-7092			2811	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,406

Applicant(s)

CIGADA ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,275,546 to Fierkens.

Regarding claim 8, Fierkens (figures 1-4) teaches an integrated circuit package, comprising:

a semiconductor device (a chip is formed on the lead frame [20]);

a molded portion (a portion of [25]) formed around the semiconductor device (a chip is formed on the lead frame [20]) and having a flashing portion (a portion of the [25] formed in the groove [21] and formed on the lead frame [20] between the groove [21] and the inlet of the upper mold [12] and lower mold [14]) of molded material extruded from a molded portion at a peripheral area thereof; and

a lead-frame (20) external to the molded portion (a portion of [25]) and having a hole (21) adjacent to the peripheral area of the molded portion having the flashing portion (a portion of the [25] formed in the groove [21] and formed on the lead frame [20] between the groove [21] and the inlet of the upper mold [12] and lower mold [14]) extruded therefrom, the flashing portion at least partially filling the hole (21).

Regarding claim 9, Fierkens inherently teaches the hole (21) is formed on an axis passing through the flashing portion.

Regarding claim 10, Fierkens teaches the hole (21) is a through-hole extending completely through the lead-frame (20).

Regarding claim 11, Fierkens teaches the flashing portion at least partially filling the hole includes a first portion formed on a first surface (a first surface of the flashing portion is on the right of the hole [21]) of the lead-frame (20) and a second portion formed on a second surface (a second surface of the flashing portion is on the left of the hole [21]) of the lead-frame (20).

Regarding claim 12, Fierkens teaches the hole (21) is a recess formed in the lead frame (20).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7 and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,665,296 to Jain et al. in view of US Patent No. 5,635,220 to Izumi et al.

Regarding claim 1, Jain et al. (figures 1, 3) teach a structure comprising:
a frame (10).

Jain et al. differ from the claimed invention by not showing air vent. However, Izumi et al. teach air vent (110). Therefore, it would have been obvious to one having ordinary skill in

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the art at the time the invention was made to incorporate the teaching of Izumi et al. into the device taught by Jain et al. because it removes the air in the cavity of the mold. The combined device shows a mold having at least one air vent from which the resin can seep out of during the injecting phase into the mold, the air vent being positioned between an upper and a lower surface of the frame, wherein the frame includes a through hole placed adjacent to an outlet of the air vent so that when the resin has solidified it forms a flash which is in coherence with one of the upper and lower surfaces of the frame.

Regarding claim 2, the combined device shows the other hole shapes can be used in the present invention (Jain et al.; column 2, lines 47-50). Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole has an ellipsoidal section. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape because it provides the least amount of fluid resistance.

Jain et al. and Izumi et al. further differ from the claimed invention by not showing the minor diameter dimension of the hole shorter than the diameter of the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the minor diameter dimension of the hole shorter than the diameter of the air vent because it provides molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 3, the combined device shows the other hole shapes can be used in the present invention (Jain et al.; column 2, lines 47-50). Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole has a circular section. It would have been obvious to

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one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape because it provides the least amount of fluid resistance.

Jain et al. and Izumi et al. differ from the claimed invention by not showing the diameter dimension of the hole equal or shorter than that of the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the diameter dimension of the hole equal or shorter than that of the air vent because it provides molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, Jain et al. and Izumi et al. differ from the claimed invention by not showing the air vent, in combination with the hole having an ellipsoidal section, gives rise to a flash of resin on the upper surface of the frame and to a flash of resin on the lower surface of the frame, with an overall combined thickness equal to or exceeding 1 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the air vent, in combination with the hole having an ellipsoidal section, gives rise to a flash of resin on the upper surface of the frame and to a flash of resin on the lower surface of the frame, with an overall combined thickness equal to or exceeding 1 mm because it provides an adhesion between the device. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 5, Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole with ellipsoidal section is positioned at a distance of more than 1 mm from the

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air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole with ellipsoidal section is positioned at a distance of more than 1 mm from the air vent because it provides molding material in the cavity of the mold.

Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 7, Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole with circular section is positioned at a distance of more than 1 mm from the air vent. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole with circular section is positioned at a distance of more than 1 mm from the air vent because it provides molding material in the cavity of the mold. Furthermore, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 16, Jain et al. (figures 1, 3) teach a semiconductor lead frame (10) for an integrated circuit having a molded portion (50), wherein the molded portion (50) having one or more flashing portions (a portion of the encapsulant formed on the upper surface and lower surface of [50]) formed at peripheral extrusion areas (the edge portion of the package), the lead frame comprising:

a conductive skeleton having a support surface and a plurality of conductive strips (the leadframe [10] has strips of lead [16]) on the surface.

Jain et al. differ from the claimed invention by not showing air vent. However, Izumi et al. teach air vent (110). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Izumi et al. into the

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device taught by Jain et al. because it removes the air in the cavity of the mold. The combined device shows the conductive strips defining an air vent zone of the surface that is structured for placement adjacent to one of the peripheral extrusion areas, the air vent zone including a hole in the surface for receiving a portion of one of the flashing portions.

Regarding claim 17, the combined device shows the hole (Jain et al.; 38) formed in a surface of the conductive strip (Jain et al.; 16) facing away from the molded portion (Jain et al.; 50).

Regarding claim 18, the combined device shows the hole (Jain et al.; 38) is aligned with the flashing portion (a portion of the encapsulant formed on the upper surface and lower surface of [50]). (Jain et al.; column 2, lines 42-46).

Regarding claim 19, the combined device shows the hole (Jain et al.; 38) is a passage through the conductive strip.

Regarding claim 20, the combined device shows the other hole shapes can be used in the present invention (Jain et al.; column 2, lines 47-50). Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole is substantially circular in shape. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape because it provides the least amount of fluid resistance.

Regarding claim 21, the combined device shows the other hole shapes can be used in the present invention (Jain et al.; column 2, lines 47-50). Jain et al. and Izumi et al. differ from the claimed invention by not showing the hole is substantially ellipsoidal in shape. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole has an ellipsoidal shape because it provides the least amount of fluid resistance.

Regarding claim 22, the combined device shows the hole (Jain et al.; 38) is spaced a predetermined distance away from air vent of the air vent zone.

Regarding claim 23, the combined device shows a semiconductor device mounted on the support surface of the conductive skeleton (Jain et al.; lead frame [10]); wherein the molded portion (Jain et al.; 50) is formed over the semiconductor device, the one or more flashing portions extending into the hole (Jain et al.; 38).

Regarding claim 24, the combined device shows the one or more flashing portions (Jain et al.; a portion of the encapsulant formed on the upper surface and lower surface of [50]) extend across a surface of the conductive strip (Jain et al.; a first surface of the flashing portion is on the left of the hole [38]) facing away from the molded portion (Jain et al.; 50).

Regarding claim 25, the combined device shows the hole (Jain et al.; 38) is a passage through the conductive strip; and the one or more flashing portions extend through the passage.

Regarding claim 26, the combined device shows the one or more flashing portions (Jain et al.; a portion of the encapsulant formed on the upper surface and lower surface of [50]) includes a bottom portion on a surface of the conductive strip facing away from the molded portion.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. in view of Izumi et al., and further in view of US Patent No. 5,914,531 to Tsunoda et al.

Regarding claim 6, the disclosures of Jain et al. and Izumi et al. are discussed as applied to claims 1-5 and 7 above.

Jain et al. and Izumi et al. differ from the claimed invention by not showing the air vent gives rise to a flash only on the upper surface of the frame. However, Tsunoda et al. (figure

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30B) teach a flash (a portion of the resin [14]), which is formed only on the upper surface of the frame (15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Tsunoda et al. into the device taught by Jain et al. and Izumi et al. because it increases the adhesion between the upper mold and the lead frame.

Jain et al., Izumi et al. and Tsunoda et al. differ from the claimed invention by not showing the flash having a thickness from 20 to 25 micrometer. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the flash having a thickness from 20 to 25 micrometer because it provides an adhesion between the upper mold and the lead frame. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,275,546 to Fierkens.

Regarding claim 13, Fierkens differs from the claimed invention by not showing the hole is substantially round in shape. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the hole is substantially round in shape because it improves the adhesion between the encapsulant material and the lead frame.

Regarding claim 14, Fierkens differs from the claimed invention by not showing the hole is substantially elliptical in shape. It would have been obvious to one having ordinary skill in the

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art at the time the invention was made for the hole is substantially elliptical in shape because it improves the adhesion between the encapsulant material and the lead frame.

Regarding claim 15, Fierkens teaches the hole is spaced a predetermined distance away from the extrusion of the flashing portion from the molded portion.

Response to Arguments

Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 571-272-1667. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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qv
June 3, 2004

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, sweeping initial 'E'.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800